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Refresher Article No. 5

The Clinician's Approach to Mastitis

BY

J. B. WHITE

Salisbury

WHEN one looks back over a period of about 25 years and considers what the term mastitis meant to the practising veterinary surgeon in those days, I think those of us who were then in practice are gratified at the advances made since.

At that time, although we had a fairly clear conception of the different clinical conditions we might encounter in the field, and could give a reasonable estimate of their outcome, we could do comparatively little to alter materially the course of the disease, and relied almost entirely on symptomatic treatment and good nursing. We were very critical of intramammary treatment of any kind until the introduction of acridine dyes.

As the bacteriology began to be worked out and the sulphonamides became available, the treatment of mastitis assumed a more logical course, but to a large extent our approach to the disease was bacteriological and based upon the prevalence of agalactiae infection. For a number of years, while the full-scale attack on *Streptococcus agalactiae* was in progress, we had little thought for other things. Gradually, however, it became apparent that this was not the whole answer and that the pattern was changing. Whether this was due to our wide use of antibiotics, causing an upset in bacterial balance, or to the change in milking methods from hand to machine, was not clear, although in general there was a marked increase in staphylococcal mastitis. It is evident, to-day, that there has been a marked change for there are now many organisms causing mastitis which were never included as pathogens a few years ago.

Fortunately, other keen minds were at work, and notable among them was Petersen. He gave us a better insight into the physiology of milking, and in particular he stressed the importance of rapid milking to gain the full benefit of the milk "let down." The application of these methods to British farming has been put into effect by workers in this country, with the result that we are now in a much better position to make a reasoned approach to the problem of chronic mastitis in a herd.

It had been apparent for some time that herds could be kept virtually free from clinical mastitis by some farmers and cowmen without the use either of antibiotics or disinfectants, and it seemed the obvious thing to find out why these workers were able, often unconsciously, to avoid mastitis where others consistently failed.

It was also very obvious in the herd with a mastitis problem that a change in milking staff would often bring about clinical resolution.

Many of the organisms concerned are constantly present in the cow's environment, and the cow can, given the opportunity, live in harmony with them without disease resulting. It is quickly clear that, in order to understand the story of mastitis, we must have a reasonable understanding of the pathology involved. Only by this means can we understand the connexion between bad milking technique and disease, the condition of the mammary tissue at the time of a flare up, and the chances of an antibiotic being able to function at any particular stage of the disease.

As has been seen in this series of articles, the picture with regard to the streptococci has been fairly well worked out. In the case of the staphylococci a great deal of work has been done, but a great many features remain to be explained. Thus there appear to be many phage types of staphylococci which can behave very differently as far as toxicity

and possible infectivity are concerned, while workers are still uncertain whether in the acute cases death is due to a toxaemia or to a bacteraemia. In many acute cases of staphylococcal mastitis the cow is in a state of collapse before the udder is noticeably inflamed or any very marked change is apparent in the milk.

Infection *via* the teat canal is usually accepted as the normal route, but this would not appear to operate in some acute cases in newly calved heifers which resemble staphylococcal mastitis and in which there is clear necrosis of the superficial skin of the udder, the inflammation often commencing with an extensive surface weal. These cases, which involve surface necrosis, are almost always seen in the first calf heifer with a tight oedematous udder and may be unassociated with a change in the milk of the quarter.

The predisposing causes of summer mastitis also deserve considerable further study.

Odd cases of summer mastitis may be seen at any time, but clinicians usually associate the heaviest losses with damp weather in the months of July, August, and September. Such weather produces a heavy grass growth and a plentiful fly population, both of which may play a part. The belief that infection may be fly-borne has received renewed support in the last year or two.

It seems almost certain that the quarter which is affected or about to be affected fills with secretion of a fluid a few hours before the onset of the acute phase, and that if it is milked out and possibly also treated at this phase no serious disease results.

Treatment

The greatest difficulty for the clinician in the treatment of mastitis is the classification of the type of infection at the first visit, in order to adopt the most suitable antibiotic for each case. It is obvious both from the article on pathology and from practical experience, that early specific treatment is essential if a good recovery is to be hoped for, and any means of typing the causal organism quickly would therefore be a great boon.

This does not mean that one cannot recognise some types of mastitis with reasonable accuracy, but many remain which cannot be identified with any certainty by clinical means.

As a result, there has been a great demand for the broad-spectrum antibiotics, which are undoubtedly very useful. They are, however, costly, and do not give clinical recovery in all cases. One must also take into consideration the natural reluctance to use a broad-spectrum antibiotic where it is unnecessary, as well as the feeling that by constant use on all and sundry cases one may add to the risk of creating resistant strains of bacteria.

It also seems that the susceptibility of the same type of organism to the available antibiotics varies widely in different parts of the country.

Whatever treatment is applied it would appear sound to give full doses and to continue them for a minimum of 3 or 4 days. Similarly, it is quickly apparent whether any particular antibiotic is being effective or not, and if there is no response within 48 hours the antibiotic should be changed.

It is also apparent that there are grounds for improvement in the base in which intramammary preparations are suspended in order to aid penetration of the antibiotic throughout the quarter.

Parenteral treatment has a valuable part to play in the case of acute mastitis and has, one feels, reduced the death rate in these cases very markedly, particularly in summer mastitis. The use of parenteral treatment may well be indicated, therefore, whenever systemic symptoms are shown. Most veterinary surgeons appear to obtain the best results from the use of large doses of antibiotics given in a rapidly diffusible form thus obtaining a maximum blood level in a short time. The dose is repeated at 24-hourly intervals. Penicillin, streptomycin, and soluble tetracyclines are all employed in the crystalline form, dissolved in sterile water, and are injected intramuscularly or intravenously.

Some workers employ injections of a crystalline solution direct into the affected udder tissue. They insist that they obtain better results by this means, although others hold equally strong views against the method.

It must be appreciated that the extensive use of antibiotics has not done away with the need for good nursing and for the use, where necessary, of ancillary treatments such as febrifuges, diuretics, and stimulants.

It is always advisable to give careful attention to teat sores and injuries, as they play a considerable part in the causation of clinical cases, and may often be intimately related with the occurrence of multiple cases in a herd. In this respect ointment which contains lanolin or other animal fat as the basis of its constitution is to be preferred to one which contains only a mineral base, as it more nearly replaces the natural skin fat. This fat may be lost if too potent detergents and disinfectants are used in udder washing or if conditions are very muddy.

It would not, perhaps, be out of place to mention the marked variance which appears to exist between *in vitro* and *in vivo* sensitivity, or that the only true index of therapeutic value is the performance of a chemotherapeutic substance in the living animal. Penicillin still has considerable value in the treatment of mastitis, and in particular mastitis caused by streptococci. It is now being found, however, that intramammary doses of 300,000 units are necessary for some of the Group C streptococci. Streptomycin, when used as an intramammary agent, is now commonly combined with penicillin, and often proves useful where either of these drugs alone is inadequate.

It is as a parenteral agent that streptomycin is particularly employed. Given in daily doses of 5 g. it is often useful in acute cases of mastitis, though rarely in the more acute staphylococcal type. This does not infer that a clinical cure can always be expected, but it would appear to reduce materially

* Achromycin.

the mortality rate, and to provide valuable ancillary aid to intramammary treatment in less severe cases.

Among the many other agents available the tetracyclines must receive important mention, as they offer a means of treating cases which give little or no response to any other drug. The purified crystalline form does provide a weapon against acute staphylococcal infections. Such costly medicaments must, however, be used with discretion, for although they are economic in selected instances, they can prove very costly if used without due thought.

Prevention

In no field of veterinary science is the importance of the maxim "prevention is better than cure" more clearly illustrated than in the field of mastitis. Furthermore, there are strong indications that considerable progress can be achieved by methods of good husbandry and milking technique, by methods which are in harmony with good production, and by methods involving a minimal use of antibiotics. This last factor must be borne in mind as an important point when one considers the narrowing margins of profit in dairy husbandry, and the increasing importance being attached to the presence of antibiotic residues in milk for consumption. It is, moreover, a field in which veterinary surgeons can employ their knowledge and skill to the best advantage.

Milking machines have, to-day, attained a high degree of efficiency when correctly used, and we can give great assistance by the detection of irregularities in their use, and by advising on the best distribution of labour during milking.

With the assistance we can obtain from the Veterinary Investigation, or other laboratory service, in the typing of infection and by the controlled use of antibiotics to clear up the actively-infected animals, there is every hope that progress can be made.

In the case of summer mastitis there have been many suggested means of prevention put forward over the years, including the sealing of teats by means of collodion, or by the injection into the teats of a non-irritant antiseptic medicament which is milked out at calving. Some veterinary surgeons believe that good results may be obtained by the use of *C. pyogenes* toxoid in order to build up an immunity, but these are in a minority.

The most frequent line of approach to-day is the use of 300,000 units of penicillin cerate into the teats of dry cows either once or twice during the dry period. There is little doubt that in some areas this method does materially reduce the incidence of summer mastitis.

Experience in bad summer mastitis years indicates that the prevailing seasonal conditions play a great part in the incidence of this form of mastitis, and that in such years a close supervision of the herd, including virgin heifers, may be a very material means of combating loss of quarters or even of life.

The combination of an "out-of-season" excess of lush grass in prolonged humid conditions at the susceptible time of the year, particularly on those farms where surface water tends to collect on pastures, is often found on farms in which the incidence is high. When such seasons occur and summer mastitis is occurring or likely to be prevalent, and more particularly where there is a history of mastitis in previous years, the following measures have been recommended by some clinicians and appear to be of value:—

(1) The removal of herds, where possible, from the more lush wet pastures to the drier pastures available.

(2) The cessation of drying off of cows during the susceptible period unless carried out under close supervision, the cows being kept in the shed or yard over a period of at least 14 days and then subjected to regular daily inspection.

(3) Premilking of the udders of all dry cows and heifers showing a tendency to overstock.

(4) The examination of all dry cows, heifers in calf, and virgin heifers, by "handling" the quarters as the animals stand in the shed or pass through a crush. Filling of the quarters, particularly of individual quarters, is regarded as suspicious. The animal is housed for treatment—which consists of a daily milking out and an intramammary antibiotic. Clinical impression suggests that these filled quarters are the preliminary to summer mastitis although in the early stages the secretion may be sterile or be associated with dysgalactiae, staphylococcal infection, or, very occasionally, other infection.

The need to examine in-calf and virgin heifers is demonstrated by limited records which indicate that as many as 50 per cent. of losses of quarters in big herds can be due to summer mastitis in dry heifers, many of which may pass unnoticed until the animal is examined when pregnant.

The use of penicillin or any other antibiotic as a routine prophylactic is difficult in this type of stock because of the patent difficulty of inserting the nozzle of the tube into many of the small teats, and the high risk of injury involved. In addition, the cost is high and the prophylactic value not certain.

If cases have occurred on the farm, inspection is usually carried out daily for a week, or until no further cases have been detected for 3 days, then every second day for a fortnight, and then subsequently every third day until the danger period seems over. It is important that the quarter should be handled and that visual appearance should not be relied upon to detect enlargement.

If one analyses the advice in our earlier articles with reference to the prevention of chronic mastitis, one finds that rapid milking with correct use of the machine for stripping in order to avoid teat damage is the goal to aim at. As with all matters involving livestock, there must be individual variations in milking performances, which will call for intelligent handling on the part of the cowman. Regular servicing of the machine and proper de-fatting of the rubber liners are also important.

With regard to the prevention of acute staphylococcal mastitis, little concrete advice seems possible, but it may be that heavy feeding before calving is inadvisable, as it tends to give rise to a very

(*Concluded at foot of col. 1 overleaf*)

Symposium *

Non-parasitic Skin Diseases in Cats and Dogs

Aids to Clinical Diagnosis of Diseases of the Skin of Dogs and Cats

BY

E. F. LEWIS

Dept. of Medicine, Royal Veterinary College

THE clinical diagnosis of skin disease in the dog and cat, as in all species, pre-supposes the possession of fundamental knowledge of the normal histology, physiology and pathology of the skin. Many indications exist, however, to suggest a dearth of knowledge of these basic matters and a great need for research and deeper understanding of the principles involved. Until this is done, clinical diagnosis of dermatoses remains purely empirical and the clinician concerns himself with the satisfactory response a particular skin condition will show to a certain line of therapy. If he achieves no more than this, the clinician has performed a useful and certainly remunerative function but is no nearer the true appreciation of the nature of the dermatosis with which he is concerned.

In the time available, one can do no more than amplify certain aspects of diagnosis which are of interest or importance and which are often cursorily applied to or omitted from routine clinical examinations. These features are matters of personal opinion and it may well be argued that any elaborate examination is not justified on economic grounds where veterinary patients are considered. This however is no excuse for failure to carry out a full clinical examination of the patient which, in the case of the dermatoses of the dog and cat, demands a detailed examination of the skin itself.

Recording of Case History

No one will dispute the need to elicit a very full history of the case. It is suggested that all details should be noted down on some system of card-recording. A reasoned analysis of accurately inscribed records will go a long way towards pointing the road to fuller understanding, at the very least, of the problems in which the clinician is interested. This is an aid to diagnosis which is preached annually to final year students in the face of the obvious scorn which this hypothesis so often reaps.

It is necessary for the clinician to observe and describe the features of the condition in as great a detail as possible. He should, for example, describe the lesions and the course of the disease, indicating whether macules, papules, nodules, vesicles, pustules, or wheals are present; the structure of the skin involved, the distribution, configuration, colour of the lesions and their association with other systems of the body are all of fundamental importance in helping the clinician to put a proper name to the condition, let alone understand its pathology. There are one or two aids which may enhance considerably the value of the clinical examination:

The visual inspection should be carried out under a good light with the patient on an examination table, preferably with an instrument which illuminates and magnifies the skin. Of the many types available, the one introduced to the author some 15 years ago by the principal of his practice, Mr. J. A. Pasfield, has proved by far the most convenient. This is the Partington Magnicometer or illuminator which consists of a magnifying head carried on a torch handle which contains the concealed lamp and batteries. Only the inspection area is illuminated and the lens system is adjustable to increase the magnification, the minimum being by 5½. There is a slot in the wall of the head which allows for the introduction of forceps or scalpel for sampling purposes and a transparent scale is provided for the accurate measurement of minute surface features.

It would not be out of place to suggest that the measurement callipers used in tuberculin testing could well be applied to skins in general to measure gross lesions and skin thickness.

Skin Biopsy as an Aid to Diagnosis

There is no intrinsic difficulty in performing skin biopsy in any of the domesticated animals. It is a minor surgical operation which every practitioner can perform in his surgery. The examination of material, however, and the interpretation of results, is a matter for a pathologist and the clinician may encounter difficulty in getting someone to deal with the sample. Should it be possible to make suitable arrangements, valuable information would be obtained which could not be acquired by other means.

The operation is performed under local anaesthetic which, even if it contains adrenalin, will not materially interfere with the histological picture. The site is prepared in the usual way and cleansed with a non-staining disinfectant. The anaesthetic solution is injected around and *not* under the area to be excised.

The Clinician's Approach to Mastitis.—*Concluded.*

oedematous udder which is prone to infection. Under these circumstances premilking is to be recommended.

In conclusion, it seems clear that there is still room for greater collaboration between the practising veterinary surgeon and the research worker. A fuller understanding of the other's problems would lead, in time, to a fuller understanding of the problems of mastitis as a whole.

Acknowledgments.—I wish to express my thanks to the other members of the committee for the help received from them in preparing this article and in particular to Mr. G. N. Gould, J.P., M.R.C.V.S., for his valuable assistance on many points.

* The first three papers in this Symposium were published last week.

The routine shape of a biopsy is a strip of skin about 1 inch long and 4–5 mm. wide and deep enough to contain the whole cutis and parts of the subcutis. It should always include some of the normal skin surrounding the lesion, if possible at both sides of it. The natural folds should be followed and the two lateral incisions should be parallel and at right angles to the surface and made with a *sharp* knife. Taper the ends of the incision and remove the material with forceps and scissors. Remove blood stains by blotting and place the piece of skin flat on a clean blotting paper to which it will adhere in its original shape. Put it immediately into fixation fluid which is generally 70 per cent. alcohol and send to the laboratory. The latter may prefer to designate its own fixative since dermato-histology requires good technique and skin is difficult to cut. The wound is closed with 2 or 3 coaptation sutures. Certainly in the human field there are many reference works to the histo-pathologic picture in the common skin diseases and the demands for similar works for use by the veterinary surgeon are loud.

Coupled with the taking of skin biopsy is the practice of swabbing for bacteriological culture. The technique of doing this and the value of the results obtained are so apparent to all that only passing reference should be made. The application of the culture, once a specific organism has been isolated, to the manufacture of an autogenous vaccine, is another important facet.

Parasitological Examinations as an Aid to Diagnosis

The *elimination* of parasitic infestations forms part and parcel of the diagnostic scheme for the *non*-parasitic conditions. As far as I am aware, there is nothing new in the time-honoured methods for demonstrating the pathogenic parasites.

The skin illuminator should be used for the selection and taking of samples. Surface acari may be seen readily and picked off for individual identification. Broken-off hair stubs or individual hairs surrounded by what may appear to be a mycelial sheath may similarly be extracted with epilation forceps. If the method of sampling is adequate and the material typical of the suspected condition there should be no need to resort to anything but the simple direct examination of material in order to make a diagnosis.

The staining of ringworm spores by means of a modified Gram technique facilitates their recognition by those persons who are not readily familiar with the appearance of ringworm elements but the preparation of the material is too long to allow the method to be used in a routine manner.

The Use of Filtered Ultra-violet Light

The diagnosis of Microsporon infection by means of Wood's light is a procedure familiar to all. The yellow-green fluorescence emitted by affected hairs when viewed by ultra-violet light filtered through Wood's glass of a wave-length of 3,660 A.U. is diagnostic. One is usually cautioned however to differentiate pescific from non-specific fluorescence and certainly a number of other conditions are characterised by fluorescence of varying colour. For this reason it is essential that the Wood's light be used in a darkened room so that any other source of light could not cause a false interpretation. It is not however generally appreciated that these other phenomena may in themselves be used in diagnosis and a brief consideration of some of them might be of interest.

The Wood's light was invented by the American physicist, Robert William Wood, in the year 1903. A wide variety of organic and inorganic substances absorb ultra-violet rays of certain wave-lengths and convert them into longer wave-lengths. This conversion of energy gives rise to the phenomenon of fluorescence. The colour and shade of the re-emitted light varies, depending on the chemical composition and purity of the material under examination, many having a characteristic glow, others merely a change in colour. These properties may therefore be used to establish the presence of a specific substance.

Increase of Contrast. Lesions undergoing evolution or involution may be seen readily with Wood's light while still invisible to the naked eye in ordinary light. The *extent* of acne, seborrhoeic eczema, psoriasis, for example, may be more accurately determined.

Hyperkeratosis of Vitamin A deficiency may be seen as highly fluorescent small white conical areas.

Subclinical jaundice in skin and mucous membranes is rendered visibly icteroid under ultra-violet light.

Porphyrinaemia, with its possible photosensitising properties, yields a beautiful pink especially in the oral cavity and in association with teeth.

The fluorescence of ulcerated epidermoid carcinoma. In the case of *squamous cell carcinoma* only, one gets a live coal fluorescence *on the surface* of a necrotic ulcerated tumour.

Erythema. Subclinical erythema may arise under many different circumstances and is heavily contrasted under Wood's light even when invisible under ordinary light.

Diet and Skin Disease in the Dog and Cat

BY

ALASTAIR N. WORDEN

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THE role of diet in relation to skin disorders and to coat change may be direct, *i.e.*, productive of specific nutritional deficiencies, or indirect. In the latter case, parasitic and other factors may be modified by nutritional status, and even by certain foods. As Mr. Jones has emphasised in his opening paper, one of the commonest case histories is loss of coat, and certainly the appearance of the coat and skin is a well-recognised index of condition or good health. Loss of condition and many diseases of varied aetiology result in a rapid change in the appearance of the coat, which loses its normal gloss or lustre, and to a superficial dryness or desquamation of the skin. These changes, when of

dietary origin, may be reversed in equally striking fashion through administration of missing factors.

During the war years, I was on occasion able to use samples of rejected batches of dehydrated soups prepared for use with the Armed Forces, and to give these to dogs and cats under my care. Although by standards existing at the time these animals were healthy specimens, the change for the better in coat condition was striking. These soups contained carrots and other vegetables, full-cream dried milk and various vitamin and other supplements, and indeed a formula that is similar in many respects has been developed during recent years as a prescription diet for use by veterinary surgeons. At the present time my colleagues and I maintain dogs and cats for experimental work in nutrition: their maintenance rations are expensive and, by accepted standards, well-balanced and representative of "good mixed diets." They are, of course, in a restricted environment. Yet the routine administration of vitamin supplements has a significant effect upon coat appearance. Once we omitted such supplements for a period of 6 weeks, with a definite adverse effect on coat lustre that was reversed within days of restoration of the supplements.

✓ It should be emphasised, before specific deficiencies are considered, that many factors can interfere with the availability and utilisation of factors present in the original foods of which the diet is composed. Suitable processing may render available to the animal factors that were in a bound state in the raw materials, an example being the nicotinic acid of maize and other cereals. Unsuitable processing may, however, destroy or bind many important dietary constituents, *e.g.*, the lysine of fish meal or meat meal. Harms & Scott (1956) have recently shown that a dog diet, containing fish, whale-meat, meat-and-liver meal, biscuit waste and propyl gallate, dried in air-temperatures below 140° C., supported good growth in weanling rats. The same diet dried at 160° C., gave inferior growth and produced rats that were thin, lethargic and incapable of reproduction, with poor coats and in some instances loss of hair from the back of the neck. The change was ascribed to failure to digest the protein, which had been damaged at this relatively low temperature by the formation of *N*-glycosides in the presence of reducing sugars. Conventional analytical procedures may not reveal damage of this type. Faulty or inadequately controlled heating or processing, or the omission fo anti-oxidants, may lead to many other types of loss. Cordy (1954) has produced a deficiency syndrome in kittens by feeding them exclusively on a commercial canned cat food consisting largely of fish, and has shown that the condition could be prevented by α-tocopherol.

Many specific deficiencies lead to skin or coat changes. Most of these findings have been made in the course of experimental work with highly artificial diets, but in the light of recent studies it would be as well not to dismiss at least some of these conditions from practical consideration. It is also of significance that, when a grossly inadequate diet is being fed (lacking qualitatively or quantitatively in several factors) deficiency symptoms characteristic of one particular deficiency may appear. This does not permit of a detailed consideration of the changes associated with, *e.g.*, the individual B complex vitamins, but these frequently involve the skin and almost invariably the coat. It is of course evident, particularly in dogs with their many types of coat and varying patterns of coat change, that superficial appearances must vary considerably from 1 breed or type to another. Nor, in any consideration of nutritional deficiency, can such factors as pregnancy, lactation and the adequacy or otherwise of maternal reserves be overlooked. Perhaps the underfed bitch or queen and their offspring, with loss of hair and evidence of arthropod parasites or bacterial infection of the skin, represent the simplest examples of the topic under discussion.

Fat Deficiency

The term "fat deficiency" requires careful definition. Fat is an important source of dietary energy, but it seems probable that all, or almost all, of its functions in this respect can be replaced quantitatively if not always qualitatively by other sources of calories. Certain of the components of some oils and fats, *viz.*, the essential fatty acids, are required for normal metabolism in much the same way as the vitamins. These unsaturated polyenoic acids are extremely susceptible to oxidative destruction, and in Great Britain and other countries of Western Europe and elsewhere there is growing evidence of the existence of a deficiency of these substances in the diet of man and of his household pets. Little or no essential fatty acids are to be found in hydrogenated or hardened fats, while the majority of land-animal fats, including those usually referred to as "animal fats," are poor sources. Unsaturated vegetable oils and marine oils are good sources provided that oxidative change has not commenced. In the medical field, the consequences of essential fatty acid deficiency are now receiving serious attention (Sinclair, 1956) and in households where dogs and cats are maintained largely on human foods or food residues the possibilities of essential fatty acid deficiency are far from remote.*

Experimental fat deficiency in the dog has been studied extensively by Hansen & Wiese and their colleagues in Texas, and the resulting syndrome with its marked skin changes is now (Hansen & Wiese, 1943, 1951; Wiese & Hansen, 1951a, b; Hansen, Holmes & Wiese, 1951) well known. When puppies are reared on a diet low in fat, distinct alterations in the appearance of the skin becomes evident at about 3 months of age. There is gradual development of a generalised flaky desquamation together with a dryness and coarseness of the hair. This desquamation becomes progressively severe, and eventually there is extensive loss of hair. There may be numerous small areas of infection, some impetigo-like in character, on the ventral surface, on the back of the ears, and on the dorsal surface of the skin. At this stage there is evidently a good deal of irritation

*Although Sinclair's somewhat speculative paper has led to considerable controversy, later contributions by other workers have nevertheless demonstrated the possibility of this deficiency.—A.N.W.

so that the dog frequently scratches. As the desquamation becomes increasingly severe, large areas of epidermis can be peeled off, while the paws become reddened, oedematous and often show oozing between the toes.

Chronic fat deficiency of up to several years duration has been described. In such cases the skin tissue in the region of the leg joints and paws may show lichenification. Frequently a purulent discharge exudes from the ear canal. Much earlier than this there may be a generalised redness of the skin, marked alopecia and emaciation. When alopecia occurs, the skin often looks and feels greasy. The rate at which these changes take place shows considerable variation, and while a marked syndrome has resulted in as little as 3 to 4 months in some experimental observations, it may take up to 18 months or longer in other animals.

When animals are on a fat-free diet for prolonged periods they go through cycles in which there is extensive desquamation with almost complete loss of hair, followed by a period in which the desquamation is decreased markedly and new hair appears. These changes are influenced by climatic conditions, and the severe alopecia and emaciation are much less likely in a temperate than in a semi-tropical environment. All the dermatological changes however have been observed in a humid climate. Dogs with chronic fat deficiency show not only the abnormalities of hair and skin but also a change in temperament. They become at first very excitable and later tremulous.

Some fat-deficient dogs appear to succumb quite readily to infection. Increased susceptibility to infection is indeed a constant feature and it is not confined to the impetigo-like areas on the skin. A continuous purulent discharge from the ears is a common feature, and one that will clear up readily when an adequate amount of fat is added to the diet.

The addition of essential fatty acids to an otherwise fat-deficient diet results in very considerable improvement, and it would appear that many of the changes in deprived animals are due to lack of essential fatty acids. In practice, however, the simple addition of an adequate amount of suitable fat to the diet is the simplest means of overcoming this problem. It might be added as a note of caution that some of the essential fatty acids are highly toxic when administered parenterally (Kodicek & Worden, 1944).

The histological changes in the skin of the fat-deficient dog include a compact and often parakeratotic stratum corneum, which in the normal animal is thin and lace-like in appearance. There is thickening of the epidermis with palisade and peg formation. In the dermis, there is evidence of extensive oedema and the presence of cellular material, fragmented collagen, swollen endothelial cells with small lumina, hyperkeratinisation of the hair follicles, plugging of the hair shafts, degeneration of the hair and enlarged sebaceous glands. After prolonged fat deficiency, the sebaceous glands appear shrunken.

In an earlier series of experiments carried out by Whipple (1932), the syndrome produced in the dog by the inclusion of oxidised fat in the diet was well defined. This syndrome was in all probability that of essential fatty acids deficiency, complicated perhaps by destruction of vitamin E. The earliest sign was a loosening and falling out of the hair ; in some dogs this took place all over the body, but more frequently the hair over the face was lost first. The hair over the feet and legs was next to go, then that over the abdomen ; sometimes that over the back could be pulled out by handfuls. The dogs remained lively and well during this period, sometimes even gaining weight. Within a variable time after the first loss of hair was noted, a rash appeared and spread over the body. About this time the appetite began to decline and the dogs became less lively. The stools were very black and inclined to be hard. The skin lesions rapidly became deep, sometimes exposing the bone. There was very little inflammation change or apparent tenderness. The dogs became weaker and frequently convulsive movements of the extremities were noticed. The constipation gave way to diarrhoea, which was usually blood-tinged and frequently frankly bloody. The animals became weaker and finally died. The eyes remained unaffected to the end ; the mouth was never involved. Although definite proof was lacking, there was circumstantial evidence that fat-deficiency occurred in dogs, at least in the London area, during World War II (Joshua, Iszard & Worden, 1945).

Vitamin E Deficiency

Until comparatively recently, vitamin E deficiency in the dog and cat was thought to be of only academic interest. During recent years, however, it has become appreciated that the metabolic functions of this vitamin are much wider than the early studies on rodent reproduction indicated, and that vitamin E is an important natural antioxidant. Certain types of food preparation lend themselves to oxidative destruction of the vitamin E originally present, and this is particularly evident when fats become oxidised through faulty processing or prolonged storage without adequate protection. Vitamin E becomes used up rapidly in an attempt to inhibit oxidation of the fats, and may therefore be lacking entirely from the diet as fed. Moreover, the destructive action of the oxidised fat may continue even after ingestion, and it will be evident from what has already been said that the harmful consequences of oxidised fat are by no means confined to destruction of vitamin E.

The very inadequate storage arrangements for carcase meat at, *e.g.*, some hunt kennels may result in a considerable degree of oxidation of the fatty tissue, and in at least one recent case this was believed to have induced a serious outbreak of vitamin E deficiency in the hounds.

Experimental vitamin E deficiency has been described by Elvehjem and his colleagues from the University of Wisconsin, who raised weanling Fox Terrier pups on a deficient diet comprising diluted commercial evaporated milk supplemented with iron, copper, manganese and cod-liver oil (Anderson, Elvehjem & Gonce, 1939, 1940). No sign of any nutritional deficiency became evident in these animals during growth, but the added strain of

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pregnancy and lactation resulted in marked changes. After 42 weeks, 1 of the females became pregnant and subsequently produced a litter of 3 pups, 1 of which survived only a few hours, while the other 2 developed signs of muscular dystrophy about the 20th day. A general lack of muscle denudation of the head and limbs, together with what was described as a dry and feverish skin, gave the appearance of a cretin-like condition.

The bitch subsequently produced a second litter, the pups in which likewise developed signs of dystrophy from about the 20th day. At this time the bitch herself showed evidence of severe deficiency, with marked loss of weight and sores on her teats, feet and other areas subjected to abrasion. The skin on her belly appeared pale, cold to the touch and lifeless, and there was a general denudation which was most prominent around the head and legs. All these symptoms responded promptly to the administration of DL-α-tocopherol, and after 8 weeks the lesions had completely disappeared, there remaining only slightly reddened areas of skin to indicate where healing had taken place.

Curative trials with the various deficient pups showed that DL-α-tocopherol was similarly effective, as was fresh wheat germ oil. It should be emphasised in this connexion that wheat germ without adequate protection is liable to rapid oxidation, and in such circumstances may be useless as a source of vitamin E and in fact even harmful. Reference has already been made to the work of Cordy (1954) in connexion with kittens.

Vitamin A Deficiency

The very marked variations in the vitamin A status of a random sample of "street" dogs in Edinburgh some years ago (Linton & Brownlee, 1939) indicated that in animals not properly cared for there might well be cases of partial or more marked vitamin A deficiency. Lack of this vitamin leads, among many other changes, to a decreased resistance to non-specific bacterial infections. Skin changes, including chronic abscesses, are a common secondary characteristic (Russell & Morris, 1939).

Achromotrichia

Frost & Dann (1944) raised black pups on a purified diet of the casein-sucrose-fat-mineral mixture-vitamin supplement type and showed that achromotrichia and decreased hair growth developed in from 2 to 11 months despite the fact that they were receiving thiamine, riboflavin, nicotinamide, calcium pantothenate, pyridoxine and choline. Nor did inositol, *p*-aminobenzoic acid or biotin have any effect upon the course of the deficiency. Two of 7 pups finally failed after reaching maturity. Shaved areas indicated the marked greying of the fur. The administration of either dried brewer's yeast or liver extract was completely curative. A general improvement in blood picture on liver or yeast therapy ran parallel to an improvement in appetite, weight gain, increased rate of hair growth and repigmentation. Despite much further research during the years that have elapsed since this work was published it may safely be said that the beneficial effects of yeast and liver are not fully explained and that the routine use of one or other, particularly the latter in combination with standardised sources of the known B vitamins is of value to many dogs and cats under conditions of domestication.

It is therefore clear that a variety of nutritional stresses or deficiencies may exert a profound effect upon coat and skin, and can presumably modify the resistance of the latter to infectious processes and to parasites. The relationship of nutritional status to infection or parasitism is complex, but there is widespread practical evidence that at least some types of skin infection and parasites may be favoured by impaired nutrition. In his valuable summary of the management and feeding of the Sheep-dog, Greig (1953) states that parasitic mange is common and this may well be related in part to the poor diets on which many such dogs subsist. The clinician must obviously endeavour to place nutritional factors in their proper perspective, but should bear in mind that qualitative as well as quantitative factors may operate and that even adequate amounts of seemingly good and well-mixed diets may, through inadequate or false preparation and processing or storage, contain inadequate amounts of one or more dietary essentials, and even antagonists to various metabolites.

As Mr. Jones has already stated, little success has attended attempts to identify so-called allergies affecting the skin of the dog and cat. The allegedly successful demonstrations by American workers of food allergies in the dog, and the negative tests conducted in this country have been discussed elsewhere (Worden, 1951). It is however conceivable that specific hypersensitivities to individual foods may occur in the species under consideration, and certainly most veterinarians and dog breeders are familiar with the itchy skin that is frequently attributed to "over-heating" foods such as maize. It is unlikely that the explanation lies simply in excessive caloric intake, but undoubtedly such associations do occur.

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Non-parasitic Skin Diseases of the Dog and Cat

BY

JOAN O. JOSHUA

Finchley

TO agree to speak on this subject is foolhardy indeed and I am left wondering whether I have a colossal conceit or whether it is a case of " Fools rushing in."

The subject is a vast one, its limits are ill-defined and as with many matters dermatological its nomenclature is varied and controversial, yet it is without question one of the most important features of everyday small-animal practice. It is so commonplace that one tends to approach it with boredom in the routine of practice ; I, at least, suffer from a profound inferiority complex when confronted by its many manifestations, knowing as I do my abysmal ignorance yet disliking the facile escape of high-flown symptomatic and descriptive names which may satisfy an owner but really mean so little ; I have not yet acquired the " gift of the gab " in dealing with the situation. I often envy the dermatologists in our sister profession their wealth of complex nomenclature, yet occasionally I dare to wonder if even they sometimes have their tongues in their cheeks ! Withal it is a subject of so much significance to the owners of affected animals that a reputation may be made or marred by an individual's attitude to it.

Classification at once is a source of controversy. My approach to the subject to-day is purely clinical and I do not pretend to any particular knowledge, hence the classification I have made is one that I think is serviceable and recognisable but no more.

Dogs

1. Bacterial Infection of the Skin

Bacterial dermatitis may be primary or secondary, localised or general, and I shall try to deal with its sub-divisions individually. However, I say at once that in my opinion bacterial invasion of the dermis is always potentially serious and its clinical manifestations should be treated with the utmost vigour at the outset if chronic and irreversible skin disease is not to result.

A. Primary

Primary skin infections can arise and I have no particular theories to offer as to how and why this invasion occurs. It may well occur at a time when the host's resistance is somewhat lowered, even if this is due to physiological causes, *e.g.*, impetigo in teething puppies, acne type lesions of the muzzle following a debilitating disease. Similarly adolescence in the dog and pseudo-pregnancy in the bitch may be the periods of choice for the invading organism.

(*a*) *Generalised.* Generalised bacterial dermatitis invariably causes severe pruritus ; the coat is poor in quality and although the owner may not consider the dog to be ill it is noteworthy that recovery from the skin infection usually elicits the comment that the dog's general health is markedly improved. Lesions are scattered over the body surface and may be numerous or scanty ; the dorsum is almost invariably affected, as may be the top of the head and under the belly. The lesion varies from an inapparent bump in the skin which can only be detected by finger-tip palpation, through the reddened papular stage with or without scab formation, to the frankly pustular lesion from which a minute bead of pus can be obtained. The lesions are always intensely irritable and if few and far between can be detected by a gentle scratching with the finger tips until a definite scratch reflex response is obtained when parting of the hair will reveal the lesion.

In all cases treatment should include attention to skin hygiene and nutrition, with cleansing, non-irritating shampoos (this is not always necessary), the addition of vitamins (especially the B complex) to the diet and ensuring adequate fat and protein intake. Initially, administration of a sulphonamide for a period of not less than 7 to 10 days : a fair proportion of cases respond to this completely.

Failing satisfactory response within 5 days recourse to antibiotics, penicillin being first choice but subsequently if necessary the use of the broad spectrum antibiotics such as chlortetracycline and oxytetracycline. Whichever agent is found to be effective must be continued for *at least* 8 days.

I do not regard any case as cured until I can no longer find any irritable area or pustule.

Staphylococcus toxoid is helpful in augmenting treatment as are sera and vaccines in more chronic cases, preferably autogenous. Local dressings are not of great value as the condition is usually too widespread but appropriate sulpha, antibiotic and antibiotic/cortisone preparations are valuable in clearing stubborn pockets of resistance.

It cannot be too strongly emphasised that failure to effect a cure in the early stage of such a case will usually result in incurable skin disease.

(*b*) *Localised.* Localised bacterial dermatitis is extremely common and we are all familiar with the acne-like condition of the muzzle and lips, especially around and in the whisker beds ; the infection of eyelids and integument of the external ear and the furunculosis of the feet so common in Bulldogs and other heavy breeds with spreading feet.

Again I feel all these conditions, and especially the last, should be tackled with vigour at the outset.

It may not always be necessary to resort to systemic administration of anti-bacterial agents in such cases but resistance to local treatment should be the signal for such treatment. Treatment will follow similar lines with local applications being more efficacious ; I frequently use the intramammary preparations, *e.g.*, of chlortetracycline, for this purpose, and again cortisone can be valuable in the final stages.

In furunculosis of the feet and heels I often use full systemic doses of suitable antibiotics (penicillin and streptomycin) injected *locally* under the sites of infection. For some pedal furunculosis narcosis or general anaesthesia will be necessary and I have used as much as 1,000,000 units of penicillin and 0.5 gm. streptomycin in *each foot* at weekly intervals with gratifying results.

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Again staphlococcus toxoid is most useful. Oestrogen has been used with benefit in one adolescent dog.

In some dogs localised bacterial infection takes the form of plaques of thickened and often discoloured tissue, usually about the legs and feet ; these lesions are intensely irritable. For these I use the same local infiltration technique of full doses of antibiotics under the lesion 48-hourly or as seems necessary, together with topical application of another antibiotic which cannot safely be injected subcutaneously*. Cortisone may be used with or after antibiotics to reduce chronic inflammatory thickening but the cardinal rule in the use of cortisone must never be forgotten, that it *must* be used with or after adequate anti-bacterial therapy.

Failing medical results, if the lesion is in a suitable place it can be easily and safely surgically excised. Any individual dog having this tendency to produce localised plaques of inflammatory reaction (infected granulomas) will always be liable to produce others, but on the whole these lesions can be satisfactorily dealt with.

B. Secondary Bacterial Infection

Bacterial invasion of the dermis frequently complicates skin disease of initially different aetiology, the skin having already been predisposed to such invasion by its primary abnormality. Once bacterial infection is superimposed on another skin condition the prognosis at once becomes much graver since it is even more difficult to sterilise an abnormal tissue.

Bacterial infection is common in demodectic mange, allergic conditions and derangements of skin due to endocrine disorders. Once this secondary infection has occurred treatment should be directed primarily to eliminating this infection and subsequently to dealing with the underlying cause.

You have already heard discussed the histology and pathology of the skin. I will confine myself to saying that there is a point in pathological changes in the skin when the condition becomes irreversible and this may be difficult to assess on purely clinical grounds. Any animal showing a generally thickened skin with signs of bacterial invasion should be suspected of having reached this stage, although cortisone and its allies are new weapons for this chronic inflammatory change.

The common organisms found involved in skin infections are, in order of frequency :

Staphylococcus, *albus* and *aureus*.

Beta Haemolytic streptococci,

Proteus,

Bacterium coli,

Soil organisms.

*Examples are Aureomycin, Terramycin Polymixin, etc.

Of these, staphylococci account for by far the greatest number of cases. Obviously bacteriological examination, particularly if the isolated organism is set up against antibiotics for sensitivity, are of great value and enable one to select at once the antibiotic of choice rather than indulge in trial and error tactics—even so response *in vivo* is often strikingly disappointing as compared with the *in vitro* test.

Actinomycosis. It is perhaps arguable whether infections by Actinomyces or Nocardia spp. are skin diseases since there is usually involvement of the sub-cutis as well. Slow or non-healing ulcerative or granulating conditions of the skin may well be suspect for this infection. Bacteriological examination will afford diagnosis and some cases are responsive to oxytetracycline.

2. Endocrine Disorders

Deficiencies of certain endocrine secretions or, more commonly, an imbalance between various hormones, frequently lead to symptoms of skin disease.

It must be said at once that the inter-relationship and balance between the various organs of the endocrine system, and even that between different secretions of the same gland, are both so delicate and so complex that it is doubtful if we can ever be really exact in our diagnosis even when we get response to the particular hormone we choose to assume is deficient. Many of the complicated hospital tests designed to determine the functional activity of individual endocrine organs which are carried out by our medical colleagues are simply not feasible in veterinary practice, hence diagnosis must remain largely guesswork.

A. Sexual Alopecia

Numerous cases of alopecia in dogs of both sexes are lumped under this heading without any very precise reasoning behind it.

The type of case I understand under this heading is that of the dog or bitch in adult life, usually 5 years or above, which commences to lose hair in a bilaterally symmetrical fashion, always starting on the lateral aspect of the loins or flanks. Hair at first becomes sparse, then a bald area appears which enlarges in a progressive concentric manner at the periphery and if unchecked may lead to hair loss over the whole lateral surface of the trunk. The skin is usually not thickened but is cool and pigmented ; pustules or papules are not common ; there is no pruritus. As a rule affected dogs are heavily built but not grossly obese and there is evidence of decreased sexual function in that bitches have slight, irregular seasons or unduly long intervals between (1 to 3 years) or oestrus is absent altogether ; dogs usually show some slight regression in the development of their genitalia, the penis and sheath being slack and soft and the testicles usually smaller than average.

These cases fail to respond to thyroid, mixed gland preparations, oestrogen, androgens, vitamin B complex by injection or indeed any of the recommended

methods. If apparent response occurs (I believe it is usually temporary natural recovery) relapse soon occurs with complete resistance to renewed treatment. Spaying of bitches and castration of dogs usually produces results, with excellent coat growth within 3 months. In the case of dogs required for breeding (it is questionable whether this is a genetic type one should seek to perpetuate !) Steinach's operation of ligating the vasa deferentia may be successful ; obviously only one vas can be ligated in these cases. The theory behind this is, I believe, to stimulate the testis to secrete more of its interstitial hormone. As castration of either sex in the age group mainly affected is not usually attended by adverse results this is the treatment of choice.

B. Hypothyroidism

Thyroid deficiency is frequently diagnosed in certain forms of alopecia and there is little doubt that thyroid therapy does give excellent results in such cases although I reserve judgment as to whether the condition is, in fact, primarily due to hypofunction of the thyroid gland despite the fact that there is undoubtedly less thyroxine available than such an animal requires.

All breeds can be affected but the Chow is probably the commonest sufferer, suggesting some inherited tendency. Alopecia is again a uniform feature, the areas first affected differing markedly from the previous group and thus serving to differentiate the two conditions.

First affected is the neck, starting at the sides and working round, eventually producing an ever-broadening collar of bald pigmented skin ; often the owner first ascribes it to collar rub. Next affected are the back of the thighs, under the tail and the tail itself.

Unless these dogs are showing advanced signs of myxoedema sexual function is usually normal although there may be a lengthened cycle in bitches and a degree of impotence in dogs. Animals showing these signs are not necessarily fat ; I have even known a very lean Chow which responded to and lived on 15 gr. thyroid extract sicc. per day put on weight and improve generally in bodily condition ; some, however, are overweight despite a minimal diet. The main criterion as to whether a dog is a candidate for thyroid therapy is, in my opinion, the character of the heart and pulse ; if these are sluggish and soft I would always exhibit thyroid. I would *never* give it to a dog with a normal or increased heart rate. Likewise I use heart rate and character, checked initially at fortnightly intervals, as my criterion of tolerance and dosage.

I use very large doses of thyroid extract. My belief is that the dog does not utilise our usual thyroid extracts (with or without anterior pituitary) particularly well. I have had commended to me the use of enteric coated tablets of thyroid extract but investigation reveals that there is no sound pharmacological basis for this. I am now trying l-triiodothyromine sodium* in the hope that this will give quicker and more regular results—I have no results to put before you yet. My thyroid dosage ranges from 6 to 25 gr. per day. I frequently maintain dogs of 50 to 60 lb. weight on 10 to 15 gr. daily for years at a time. After the initial period of checking heart rates (I usually do 14 days, 14 days, 28 days, 2 months and then regard dosage as established) re-checks at 3 monthly intervals are enough, with instruction to the owner to report any weight loss or hyperaesthesia at any time. Response is often delayed 3 to 6 months, especially if the case is of long duration.

Stimulating dressings to the bald areas are useful once the thyroid has laid the basis for recovery : their name is legion and personal choice must be the guide—I am now trying our President's prescription which he gave us last month.

C. Testicular Tumours

Dogs developing tumours in either or both testes often show skin lesions, initially of an alopecic nature and later sometimes with exfoliation and secondary infection.

The quality and quantity of coat on the body changes, leading to a more or less widespread state of baldness. Symptoms of sex inversion may be present. The age group is 6 years plus and cryptorchid dogs should always be suspect. Palpation of the testes (if available) supplies the diagnosis. Removal of the diseased organ usually effects a cure in 6 to 12 weeks. If the opposing testis is hypoplastic as is often noted in dogs with a tumour in one testicle, steinaching of the remaining organ is helpful.

Skin lesions may likewise be associated with tumour of the ovary in the bitch.

D. So-called Canine Cushing's Syndrome

Coffin and Munson have described a syndrome which they consider parallels Cushing's Syndrome in man in which tumours of adrenals or pituitary may be found. I have seen these cases and in one case did find adrenals of distinctly generous proportions but with no tumour. Again hair character changes, the coat becoming sparse and fluffy and eventually lost over the whole undersurface of the trunk at least. The abdomen is enlarged, there is hypoplasia of the genitalia, the dog's character becomes heavy and sluggish with mental slowness, there is often polydypsia and polyuria. There is no practical treatment.

Campbell and Mortimer have just recorded a similar case in which they have failed to show any evidence of pituitary or adrenal hyperfunction.

Perhaps one comment on their case is justifiable, that although the hyperkeratosis of the foot pads was said to be coincidental with other symptoms it is none the less a fact that this condition is, if one may use a paradox, a normal abnormality of the Bedlington !

Finally I would comment that I have seen one dog with widespread pruritus, exfoliation and infective dermatitis associated with diabetes mellitus ; the animal was not treated thus I cannot claim

* Tertroxin (Glaxo).

dramatic resolution of the skin condition but at least it gets us away from the thyroid/gonad complex !

3. Allergies

Skin manifestations of a state of hypersensitivity are common. I have dealt in some detail with these so-called allergic dermatoses elsewhere and will confine myself to a brief summary to-day.

Acute Wet Eczema. You will notice that in avoiding names I have also avoided the use of that common term " eczema "—a label I much dislike since I do not know what it means or I mean by it, however I do consider that the term " wet eczema " is justifiable in describing those lesions which arise very suddenly, comprising an area of acute surface inflammation of the skin with either serous or purulent exudation. I believe some of these lesions arise as a result of a food allergy, but many are due to self-inflicted damage to the superficial layers of the dermis by the dog itself following some localised and probably trivial pruritus. Methods of treatment are legion and I have no particular favourites ; relief of irritation is an essential of early treatment. If believed due to food allergy a trial and error method of incriminating the offending food may achieve results.

In generalised dermatoses due to contact hypersensitivity reactions (grass is markedly allergenic) lesions vary from none at all discernible macroscopically, through stages of localised erythema, to a sarcopt-like condition (differentiated by absence of ear edge lesions) and ultimately a diffuse thickening of the skin with or without bacterial infection. Intense pruritus is invariable and incidence is seasonal. Treatment involves the use of antihistamine parenterally and locally, vitamin B complex and barrier creams.

Avoidance of contact with the allergen is a virtual impossibility. Antihistamines I have used successfully include diphenhydramine*, promethazine†, Mepyramine‡ and more recently chlorpheniramine maleate§.

This group of dermatoses includes many and varied non-parasitic skin conditions which, being intensely irritable, are a great worry to dog and owner alike and are a source of dissatisfaction to the clinician since dramatic cures are the exception rather than the rule. It is a fact, however, that some dogs after several seasons of hypersensitivity do develop some immunity, hence certain cases are self-limiting.

4. Miscellaneous Group, Some With a Breed Incidence.

(*a*) *Pedal Eczema.* I find this a useful label for the common condition of interdigital dermatitis seen in many breeds. A description of the lesion is unnecessary as it is so familiar to you all. I believe wet weather and muddy conditions to be of some aetiological significance. Licking and biting of the feet with obvious tenderness or even lameness on hard ground are common signs. Most mild cases respond extremely well to painting daily with pigmentium tinctorium, a B.P.C. formulation containing brilliant green, crystal violet, alcohol and water. If secondary infection is severe antibiotics may be necessary. If all four feet are soft and showing a tendency to become inflamed simple soaking in a solution of magnesium sulphate and/or alum can be most helpful. Astringent rather than emollient applications are to be preferred.

(*b*) *Lip-fold Eczema of Spaniels.* Familiar to everybody. The only sign is usually the smell ! I have not yet had to resort to surgical excision and my routine treatment is thorough cleansing of the area followed by painting with a solution of silver nitrate, 1 to 5 per cent. according to the case. Only rarely do I find antibiotics or cortisone application necessary.

(*c*) *Seborrhoea.* A condition of over-activity of the sebaceous glands of the skin mainly seen in Spaniels and other thick-skinned breeds. By the time they are presented for treatment secondary bacterial invasion has usually occurred. Treatment is unsatisfactory. It must be initially directed to eliminating bacterial infection and secondly to improving general skin hygiene. Preparations containing salicylic acid may be useful.

(*d*) *Exfoliative Dermatitis.* Seen frequently in the Wire Fox Terrier and allied breeds. There is a generalised tendency for skin thickening with excessive desquamation of the superficial layers of the dermis. Secondary infection is frequently a factor.

Antibiotics, staphylococcus toxoid, streptococcus anti-sera and vaccines all have their place in treatment. Cortisone can be extremely useful in localised areas.

(*e*) *Scottie Skin.* The Scottish Terrier seems completely unable to rid itself of normal skin debris which thus accumulates in the coat, acting as an irritant and blockage to normal skin ventilation and thence arises a dermatitis. Treatment is on obvious lines, attention to skin hygiene being paramount. I find a most useful shampoo to be ½ oz. of liq. picis carb. meth. to 1 pint of soap lather ; alternatively selenium suspensions are valuable. Prophylactically I recommend monthly bathing as a routine : the Scottish Terrier is the *only* breed in which I consider this to be either necessary or desirable.

(*f*) *Excess Cerumen Production.* Some dogs have a tendency to produce apparently excessive amounts of a material resembling cerumen in certain body areas. Terriers often do it between the toes, Bedlingtons and similar soft-footed breeds inside the thighs and axillae and Alsatians in the thighs and under the tail. A cream recommended to me by Mr. J. W. H. Holmes I find most helpful : Prescription Ac. Salicyl. gr. 60, liq. picis carb. M. 60 Glycerin in 120. Water soluble ointment base to 4 oz. Faulty ventilation seems to play a part in this, *e.g.*, under the clapped-down tail of the Alsatian and in the deep interdigital fossa of the well-knuckled-up Terrier. How to overcome this is another matter.

(*g*) *Frictional Acanthosis.* Seen almost solely in the Dachshund and due to constant contact between adjacent skin surfaces, *e.g.*, axilla and chest wall. Causes skin thickening and pigmentation. Cortisone may be helpful in reducing thickening.

* Benadryl. † Phenergan. ‡ Anthisan. § Piriton, A. & H.

5. Conditions of Unexplained Aetiology

There are, of course, all too many diseases of the skin which defy classification and I will only mention two which come to mind.

(*a*) *A Generalised Hyperaemia of White and Largely White Dogs*. There is generalised pruritus, especially of the dorsum, the dog having a tendency to rub the back under chair edges and so on. The only lesion is a generalised excessive pink coloration of the skin. Response to calcium therapy is often satisfactory.

(*b*) *Psychological.* In many cases of intractable pruritus in which no cause can be ascribed and in which no lesions exist other than those inflicted by the dog's own biting or scratching it seems not unreasonable to postulate a mental cause. The life of many modern dogs is boring in the extreme and many, in my view, are neurotic due to the noise and rush of town existence. I question very seriously the propriety of dog owning by families in which all members are out at work most of the day and the dog is confined to a small house or, worse, a flat. Attempts to deal with these cases by sedatives or tranquillisers are by no means uniformly successful and again I question the ethical correctness of a treatment which attempts to drug an animal into acceptance of fundamentally unhappy conditions of existence.

6. Dietetic Origin

Diet and skin disease has already been dealt with fully in an earlier paper. I will only mention very briefly two points.

One often sees dogs with some pruritus and poor quality coat. The top coat is harsh and dull and the undercoat is sparse or absent ; the skin itself lacks suppleness and often shows a very slight flaky exfoliation. Despitè the fact that such dogs are often in fairly fat condition I regard this as a condition due to deficiency of essential fatty acids. Enquiry into the diet of such animals may not suggest that there is any deficiency of fat as such but my treatment none the less comprises the administration of linseed oil, 1 teaspoonful to 1 tablespoonful according to size and individual toleration. Response is evident in 2 to 6 weeks—there is no doubt stockmen who use linseed oil for show conditioning are no mugs !

Regarding vitamin deficiencies—I have already referred to the value of the whole B complex in general skin nutrition and in my view the exhibition of vitamin B complex in any skin abnormality is good practice. I have seen occasional cases which I have attributed to a deficiency of vitamin A, usually in puppies or young dogs ; in these cases lesions are of a dry, necrosis type with subsequent secondary infection possible, particularly of the tail-tip and limbs, the muzzle may also be involved. In any dermatosis which is accompanied by lesions in the mouth such as gingivitis, haemorrhages or ulceration of the palate, I would use massive doses of vitamins B and C, despite the reputed canine ability to produce the latter. A vitamin preparation I find most useful is Abidec—it seems to be well utilised by both dogs and cats. Additional quantities of any specific vitamin suspected as being deficient can be given, parenterally if necessary.

Exhibition of vitamin E for other purposes often results in skin and coat improvement.

To summarise my approach to treatment of skin conditions as a whole.

Firstly, to return the dermis to normality so far as absence of lesions, nutrition, suppleness and thickness (allowing for breed differences) are concerned. Secondly, to attack any bacterial invasion of the dermis with vigour and thoroughness, using the whole modern armoury of antibiotics and cortisone preparations. To attend to skin nutrition in respect of fat and vitamins. To attend to skin hygiene through bathing, grooming and correct advice as to stripping and clipping, remembering that only non-moulting soft-coated breeds should be clipped, and the remainder stripped.

To apply such local dressings as we each find useful from time to time, remembering that our personal fashions change as fast as new products are made available !

And finally to ensure as far as lies in our power that the patient truly leads a dog's life !

Cats

Time is running out, which is fortunate for both my audience and myself since I know, if possible, even less about cat skin diseases than I do about dogs !

Bacterial Invasion of the dermis of the cat is rare, which, in view of the frequency with which pathogenic organisms are planted in its sub-cutis, is odd and should give skin pathologists something to think about. I have seen staphylococcal invasion of the skin of the muzzle and forehead with considerable fibrous tissue reaction on one occasion. It would take a purist to decide whether the so-called rodent ulcer of the cat's lip is a lesion of the skin or mucous membrane initially : in any case it appears to be a low grade bacterial infection—it is in no sense neoplastic—and responds to gentian violet, chlortetracycline or cortisone.

Secondary bacterial infection of the papules of so-called miliary eczema occasionally occurs but, conversely from the canine conditions, it clears spontaneously when (or if) the underlying dermatosis resolves.

Endocrine Disorders in the sense of sexual alopecia occur in cats but again the converse to the canine state of affairs applies, namely that it is the neutered cat of either sex which suffers and recovery is often effected by appropriate hormone implants rather than *vice versa.* I have recently seen a typical alopecia develop in a cat castrated as an adult ; it is the only time I have seen this follow adult castration within a few weeks and I can only suggest that it was because this cat was castrated just after Christmas, *i.e.*, at the start of the breeding period, rather than during the autumn period of quiescence which is my normal rule. Hair loss is first noted down the back of the thighs, followed by spread along the inside of the thigh and up the abdomen ; there are no abnormal skin lesions but some pruritus obviously exists as there is a good deal of licking by the patient which

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may eventually lead to self-inflicted areas of surface ulceration. These are the cases which respond to testosterone implants.

Allergic Skin Reactions undoubtedly occur, but in my view the hypersensitive state is invariably superimposed upon an existing skin abnormality, examples are flea infestation, ulcers caused by licking and again, miliary eczema.

Response to antihistamines is variable but they are always worth a trial. The typical allergic skin lesion is a superficial ulcerated area, denuded of hair and hyperaemic, serous, purulent or scabbed according to the stage at which one sees it.

Finally, Miliary Eczema. This is a name I very much dislike as I do not consider the lesions fit into the classification of an eczema at all, but it is the one most commonly used. I myself prefer the equally meaningless term " dietetic dermatitis " as I believe there is usually an underlying diet cause in most cases. It is *not*, however, correct to call it " fish-eater's skin " as many cats on good mixed diets are sufferers. I attribute it rather to an inability on the part of certain individuals to utilise certain factors in the food, especially some members of the vitamin B complex, notably biotin.

The lesions are so well known it seems superfluous to mention them, but to ensure that we are all thinking of the same condition, I am referring to the dermatosis in which the initial lesions are papular eruptions along the dorsum, particularly just above the tail ; in mild cases papules may be confined to this area but in worse cases every part of the skin surface can be involved. Subsequent complication of the lesion by licking, hypersensitivity or infection is common. I have not had response in these cases by using hormones but cortisone can be very useful in allaying irritation and allowing natural resolution to occur.

Attention to diet is important, but with an animal so fastidious as the cat this can present great difficulties. White fish should be reduced or even omitted and other flesh proteins fed regularly, particularly raw liver. I always supply an additional source of biotin, a factor I believe to be most important in this condition, by means of one of the proprietary liver extract preparations*. My other stand-by is shampooing with gammexane/sulphur mixture. I find this efficacious in a high proportion of cases and I have wondered if the reason is that an almost subclinical notoedric or sarcoptic mange is superimposed upon the original dermatosis. As this meeting deals with non-parasitic skin diseases only I will say no more. Thus my routine treatment for this condition is attention to diet, addition of a biotin supplement, shampoos of gammexane and sulphur equal parts, and thereafter antihistamine or cortisone as seems indicated in each individual case.

At one time we used to see a number of cases of so-called " licker's skin " in which the cat persistently licked the inside of the limbs, especially the thighs, until a series of raised ulcers resulted : I rarely see it now but vitamin C often gave results.

*Murnil or Protinex.

From the above very sketchy remarks you will realise that my claim to lack of knowledge is no empty one, but maybe it will serve as a sort of Aunt Sally for you to shoot at. There is no condition I meet commonly in the surgery that causes me a greater sense of frustration than non-parasitic skin disease in the cat.

I sincerely hope that, as a result of to-day's meeting, our lack of fundamental knowledge of skin pathology in the dog and cat will be recognised and that some of our colleagues in research may be stimulated to work that will eventually aid the small-animal clinician in his perpetual battle in uncharted territory.

FIFTY YEARS AGO

The late Dr. Bullock had just completed his first year as Registrar of the Royal College. In a leading article on the Register for 1908, THE RECORD said :—

" The new Register has just been published, and, as it is well known that a special effort has been made to remove inaccuracies, its appearance will awaken considerable interest. At present, we can only comment with comparative brevity upon its most important features. Very many alterations have been made, but before indicating these in detail, we may say at once that Mr. Bullock has earned the gratitude of the profession for his first year's work as Registrar.

" The most important function of the Register, of course, is its legal one—that of furnishing an accurate list of our members. It is in this respect that the recent issues have been most unsatisfactory, and that the present one presents the most marked changes. Over 700 alterations have been made of the addresses of members, and the number—especially when we consider the total strength of the profession—testifies alike to the previous need for a thorough revision of the list, and to the care with which the work has been done. The task must have been extremely difficult, and it has fortunately been accomplished without an accompaniment which some feared, *viz.* the removal of many names from the Register. It is true that the list of members has fallen to 3,382, as compared with 3,434 last year, but that is partly accounted for by a heavy roll of deaths. Only 79 new members have entered the profession since the last Register was issued, while 110 deaths have been reported—some of the latter, very possibly, being those of former years which were unknown at Red Lion Square."

A SUGGESTED REPRINT SERVICE

We have received a number of replies on the subject of a suggested reprint service covering the summaries which appear at the head of the principal scientific and clinical papers published in this journal. Details of the suggestion were published on February 15th. In order to decide upon the practicability of the project the Editorial Committee would like to get the maximum expression of opinion from readers, and therefore further replies would be welcome.

First Annual Congress of the British Small-animal Veterinary Association

MARCH 28th, 29th and 30th, 1958

TO BE HELD AT THE SHAFTESBURY HOTEL, MONMOUTH STREET, LONDON, W.C.2

Time	*Windsor Suite (Reception Room and Main Conference Room)*	*Tudor Room*
Friday Morning, March 28th		
9.30–9.45	Opening of Congress—Short address by the President.	
9.45–11.15	Papers. *Chairman :* Mr. G. C. Knight, F.R.C.V.S.—London. (*a*) The use of intravenous solutions, including blood, therapeutically in the dog. Illustrated by two films. *Speaker :* Mr. E. M. Pittaway, M.R.C.V.S.—Coventry. (*b*) Treatment of shock. *Speaker :* Mr. D. D Lawson, M.R.C.V.S.—Glasgow.	
11.15–11.45	Coffee.	
11.45–12.45	Discussion. *Chairman :* Mr. B. V. Jones, M.R.C.V.S.—London. Current research in small-animal diseases. Its deficiencies and how these may be overcome, suggested subjects requiring urgent consideration to be drawn up. Discussion to be opened by Miss J. O. Joshua, F.R.C.V.S.—London.	Paper. *Chairman :* Mr. O. G. Jones M.R.C.V.S.—London. Ailments of cage and aviary birds. *Speakers :* Mr. I. F. Keymer, M.R.C.V.S.—London ; Dr. E. C. Appleby, B.S.C, M.R.C.V.S.—Edinburgh.
12.45–2.15	Lunch.	
Friday Afternoon, March 28th		
2.15–4.00	Papers. *Chairman :* Mr. S. F. J. Hodgman, M.R.C.V.S.—Kennett. New techniques in small-animal surgery and anaesthesia. Section I. (*a*) Extraction of a dislocated lens and total extraction of a cataractous lens. (Film.) *Speaker :* Mr. G. C. Knight, F.R.C.V.S.—London. (*b*) Spinal anaesthesia. *Speaker :* Dr. J. S. A. Spruell, M.R.C.V.S.—Dundee. (*c*) Boyles anaesthetic technique. (Film.) *Speaker :* Dr. L. W. Hall, M.A., B.SC., M.R.C.V.S.—Cambridge. (*d*) Anaesthetic technique with special reference to respiratory function. *Speaker :* Miss B. Weaver, M.R.C.V.S.—Bristol.	
4.00–4.30	Tea.	
4.30–6.00	Papers. *Chairman :* Mr. A. Steele-Bodger, M.A., B.SC., M.R.C.V.S.—Lichfield. Laboratory aids to diagnosis in clinical medicine in small animals. (*a*) *Speaker :* Dr. W. I. M. McIntyre, M.R.C.V.S.—Glasgow. (*b*) The application of biopsy technique in small-animal practice. *Speaker :* Mr. K. W. Head, B.SC., M.R.C.V.S.—Edinburgh. (*c*) Clinical laboratory technique applicable in practice. *Speaker :* Mr. J. W. Heney, M.R.C.V.S.—Altrincham.	
Saturday Morning, March 29th		
9.15–10.45	Papers. *Chairman :* Mr. J. A. Dall, B.SC., M.R.C.V.S.—Torquay. Recent advances in diagnosis. (*a*) Diagnosis of pseudo-Hodgkins disease. *Speaker :* Mr. M. Irfan, B.V.SC., M.R.C.V.S.—London. (*b*) Urography in small animals. *Speaker :* Mr. R. Churchill Frost, M.R.C.V.S.—London. (*c*) Smear diagnosis. *Speaker :* Professor C. Jackson, D.SC., B.SC., M.R.C.V.S.—Kennett. (*d*) Hip dysplasia in the dog. *Speaker :* Mr. W. B. Singleton, M.R.C.V.S.—Kennett.	9.15–10.15 Paper. *Chairman :* Mrs. E. K. M. Jackson, B.SC., M.R.C.V.S.—Darlington. Cortisone and its derivatives in small-animal practice. *Speaker :* Miss O. Uvarov, M.R.C.V.S.—London.

Saturday Morning, March 29th

Time	*Windsor Suite (Reception Room and Main Conference Room)*	*Tudor Room*
10.45–11.15	Coffee.	
11.15–12.15	Paper. *Chairman :* Mr. J. S. J. Lauder, M.R.C.V.S.—Altrincham. Difficulties encountered in the differential diagnosis of certain eye conditions in the dog. *Speaker :* Mr. D. M. Heeley, M.R.C.V.S.—Marden. *Opener :* Mr. J. R. Holt, M.R.C.V.S.—Chorley.	
12.15–1.00	Discussion. *Chairman :* Mr. W. B. Singleton, M.R.C.V.S.—Kennett. The B.S.A.V.A. and other professional bodies, with special reference to the Association's relationship with the B.V.A.	
1.00–2.15	Lunch.	
Saturday Afternoon, March 29th		
2.15–3.30	Papers. *Chairman :* Mr. P. J. Dalton, M.R.C.V.S.—Salisbury. New techniques in small-animal surgery and anaesthesia. Section II. (*a*) Treatment of distal malunion fractures of the radius and ulna. *Speaker :* Colonel J. Hickman, M.A., M.R.C.V.S.—Cambridge. (*b*) Prostatectomy in the dog. *Speaker :* Dr. J. Archibald, D.V.M., M.V.SC.—Ontario. (*c*) Some examples of new equipment for the surgeon. *Speaker :* Mr. G. W. Serth, M.R.C.V.S.—Purley.	
3.30–4.00	Tea.	
4.00–5.30	Discussion. *Chairman :* Mr. M. Young, M.R.C.V.S.—London. The B.S.A.V.A.—its members and the Welfare Clinics. How can the Association improve the present position and what steps should it take to implement this ?	Discussion. *Chairman :* Mr. K.G.D. Evans, M.R.C.V.S.—London. The design of small-animal premises and kennels. What improvements can be made, bearing in mind the capital cost and relating it to the possible return to be expected. *Speakers :* Mr. F. G. Startup, B.SC., M.R.C.V.S.—Worthing. Mr. W. Gimber—London.
Sunday, March 30th		
10.00–11.00	Discussion of Fees. *Chairman :* Mr. G. N. Henderson, B.SC., M.R.C.V.S.—London *Speakers :* Mr. D. G. Lewis, M.P.C.V.S.—Rochester. Mr. A. Steele-Bodger, M.A., B.SC., M.R.C.V.S.—Lichfield.	
11.00–11.30	Coffee.	
11.30–1.00 2.00–4.00	Annual General Meeting. The Agenda will be issued before the Congress.	

Note.—It is intended to ask recording secretaries to submit a report of discussions during the early part of the A.G.M. A display of unusual instruments and equipment and items referred to in some of the papers will be presented in the main Conference Room.

All applications for reservations at the Shaftesbury Hotel should be made through Thomas Cook & Son, Ltd., Berkeley Street, Piccadilly, London, W.1. Communications relating to the Congress should be made to the Hon. Secretary, B.S.A.V.A., at "Pentlands," Moulton Road, Kennett, Suffolk.

A charge of one guinea will be made to non-members of the B.S.A.V.A. attending the Congress.

The following commercial firms are exhibiting at the Congress :—

ALLEN & HANBURY'S, LTD.	DISTILLERS COMPANY (BIOCHEMICALS), LTD.	KODAK, LTD.
BAILLIERE, TINDALL & COX.	W. GIMBER & SONS, LTD.	MAY & BAKER, LTD.
BOB MARTINS, LTD.	GLAXO LABORATORIES LTD.	NEWTON VICTOR, LTD.
BROOKWICK, WARD & CO.	C. J. HEWLETT & SONS, LTD.	PARKE DAVIS & CO.
BURROUGHS WELLCOME & CO.	IMPERIAL CHEMICAL (PHARMACEUTICALS), LTD.	WILLOWS FRANCIS, LTD.
COOPER, MCDOUGALL & ROBERTSON, LTD.	INTERNATIONAL SERUM CO., LTD.	WILLIAM WARNER & CO., LTD.

The stands will be displayed in the Stuart Room of the Shaftesbury Hotel.

News and Comment

STUDY TOUR IN DENMARK FOR BRITISH VETERINARY SURGEONS

The Danish Institute has extended an invitation to British veterinary surgeons to take part in a study tour in Denmark for the purpose of seeing veterinary services in that country. The suggested dates are as follows: Leave Harwich for Esbjerg on August 30th, and return to Harwich on September 12th.

The Danish Institute, sponsored by its Government, would pay certain expenses in Denmark, but the tourists would pay for travelling and hotels at a cost to each participant of approximately £40 (second-class travel).

The programme for the tour will be arranged by the Danish Institute in co-operation with the Danish Veterinary Association. The precise itinerary has not yet been decided, as our Danish colleagues think that members of the profession in this country might like to make suggestions about the kind of things they would most wish to see. Apart from particular requirements, it is intended that the study tour will cover "a little of everything."

It is not necessary to enlarge upon the high quality of Danish veterinary skill and knowledge, and there is no doubt that those who decide to visit Denmark will have a very enjoyable and instructive time.

Will members of the profession who would like to take part in the study tour please write *direct to the Danish Institute, 3, Doune Terrace, Edinburgh, 3, and not to the B.V.A.*, making such suggestions about matters of particular interest as they may wish?

COUNCIL OF THE R.C.V.S.

The University of Edinburgh has appointed Professor A. Robertson, M.A., B.SC., PH.D., M.R.C.V.S., F.R.I.C., F.R.S.E., Director of the Royal (Dick) School of Veterinary Studies, as one of its two representatives on the Council of the Royal College for the unexpired period of office of Professor-Emeritus W. M. Mitchell, who has resigned. Professor Robertson will hold office until the Annual General Meeting of the College in 1959.

THE ROYAL COLLEGE OF VETERINARY SURGEONS TRUST

An important event in the progress of the veterinary profession has taken place recently and without ceremony. Recently there was held at the College the inaugural meeting of the R.C.V.S. Trust. This new body, created with the approval of the Privy Council, has been permitted by the Board of Trade to be incorporated without the use of the word "limited" and has the following objects:—

(a) To promote, encourage, and advance the study and practice of the art and science of veterinary surgery and medicine;

(b) to advance education in connexion with the said study of the art and science;

(c) to attain the above objects by assisting in the execution and discharge of any educational or charitable function of the College, and also to provide and maintain a library.

The Chairman will be the President of the College for the time being. The first Treasurer will be Professor Leslie Pugh, and the first Secretary, Mr. W. G. R. Oates. The Committee of Management will be the entire Council of the Royal College. We hope to publish a fuller account of the Trust and its immediate intentions at an early date.

UNIVERSITY NEWS

Liverpool

The Annual Ball of the Liverpool Veterinary Society took place in the Students' Union on Friday, February 21st, from 8 p.m. to 2 a.m. Approximately 300 students, staff, members of the profession, and friends had a most enjoyable evening. The theme of the decorations this year was the "Transantarctic Expedition." The centre-piece was an enormous whale slung from the ceiling, but in spite of the seemingly chilly surroundings the atmosphere was well above zero. After some excellent refreshments half-way through the evening the cabaret afforded an opportune break allowing time for digestion. The highlight of the evening was the sight of several members of staff posing for caricatures.

PERSONAL

Births

LEITCH.—On February 15th, 1958, to Kathleen, wife of Iain D C. M. Leitch, B.SC., M.R.C.V.S., of 31, High Street, Laurencekirk, Kincardineshire, a daughter, Carol.

MARKHAM.—On February 10th, 1958, to Joyce (*née* Readings), wife of A. E. G. Markham, B.SC., M.R.C.V.S., at Dar es Salaam, a daughter, Susan Gervaise.

SHAW.—On February 14th, 1958, to Doris, wife of David L. Shaw, M.R.C.V.S., of "Grovelands," Hailey Road, Witney, a third son, Michael James.

Engagement

RUTHY—ELLISON.—Mr. D. A. Ruthy, B.VET.MED., M.R.C.V.S., son of Mr. and Mrs. A. Ruthy of "Nova," 20, Baker Street, Sparkhill, Birmingham, and Miss L. D. Ellison, daughter of Mr. and Mrs. R. Ellison of "Home Farm," Rock, Alnwick, Northumberland.

Death

ROBINSON.—At Carlisle, on February 11th, 1958, Ada, widow of the late R. Craig Robinson, M.R.C.V.S.

Dr. W. R. Wooldridge has been appointed vice-Chairman of the Parliamentary and Scientific Committee.

Lt.-Col. D. I. C. Tennant has been appointed Chief Veterinary Officer of the R.S.P.C.A. He takes up his duties on May 1st. Previously in private practice, he was veterinary surgeon to Bristol Corporation and to the Clifton Zoo.

R.C.V.S. OBITUARY

We record with regret the deaths of the following members of the profession:—

HAIGH, Brian, Wayside, Poolfoot Lane, Singleton, Nr. Blackpool, Lancs. Graduated July 7th, 1947, at

the School of Veterinary Science, Liverpool. Died February 17th, 1958, aged 38 years.

Supplementary Veterinary Register

POWELL, Basil Myrton, Cedars Way, Newport Pagnell, Bucks. Died February 17th, 1958, aged 61 years.

COMING EVENTS

March

5th (Wed.). Annual General Meeting of the A.V.T. & R.W.'s (Northern Region) at the Veterinary Hospital, University of Liverpool, 2 p.m.

Spring Meeting of the Society of Women Veterinary Surgeons at Bibby & Sons Nutrition Research and Advisory Centre, Neston, Wirral, 1 p.m.

Annual General Meeting of the South Wales Division at the Dolwar Café, Carmarthen, 2 p.m.

6th (Thurs.). General Meeting of the Central Veterinary Society at the Royal Veterinary College, Camden Town, N.W.1, 6 p.m.

96th Annual General Meeting of the Lancashire Veterinary Association at the Blossoms Hotel, Chester, 2.30 p.m.

19th (Wed.). Meeting of the Section of Comparative Medicine, Royal Society of Medicine, at the Society's House, 5 p.m.

19th, 20th and 21st (Wed., Thurs. and Fri.). Committee and Council Meetings of the Royal College of Veterinary Surgeons.

April

9th, 10th and 11th (Wed., Thurs. and Fri.). B.V.A. Committee and Council Meetings at the Royal (Dick) School of Veterinary Studies, Edinburgh.

12th (Sat.). 12th Annual Dinner of the B.R.X. Club at the Royal Veterinary College, 6 p.m.

25th (Fri.). General Meeting of the Mid-West Veterinary Association at the Berkeley Café, Clifton, Bristol, 2.30 p.m.

BRITISH VETERINARY ASSOCIATION QUARTERLY MEETINGS IN EDINBURGH

Wednesday, April 9th—Royal (Dick) School of Veterinary Studies

10.15 a.m. Small-Animals Committee.
2.15 p.m. Home Appointments Committee.
3.45 p.m. Farm Livestock Committee.

Thursday, April 10th—Royal (Dick) School of Veterinary Studies

9.30 a.m. Finance Sub-committee.
10.00 a.m. Veterinary State Medicine Committee.
11.30 a.m. Parliamentary and Public Relations Committee.
2.30 p.m. General Purposes and Finance Committee.

Friday, April 11th—Royal (Dick) School of Veterinary Studies

10.15 a.m. Council Meeting.

ADDRESSES OF DISEASE INFECTED PREMISES

The list given below indicates, first the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax

Berks. Home Farm, Avington Estate, Kintbury, Newbury (Feb. 18).

Essex. Wolseys Farm, Duton Hill, Dunmow (Feb. 21).

Glas. Bellgrove Street Station, British Railways, Glasgow, E.1. (Feb. 20).

Foot-and-Mouth Disease

Hants. Broadway Farm, Ovedean, Portsmouth (Feb. 20).

Lancs. Sindsley Farm, 384, Worsley Road, Swinton (Feb. 18).

Somerset. Woodside Farm, Woolverton, Bath (Feb. 18); Court Farm, Buckland Dinham, Frome (Feb. 19); Thrupe Farm, Masbury, Wells; Rodmore Farm, Evercreech, Shepton Mallet (Feb. 21); Hurling Pot Farm, Doulting, Shepton Mallet (Feb. 22); Home Farm, West Cranmore, Shepton Mallet (Feb. 23).

Fowl Pest

Essex. Bungalow Farm, Stock Grove, Stock (Feb. 22).

Lancs. Hankinson House Farm, Eaves, Woodplumpton, Preston (Feb. 17); Ivy House, Rufford Road, Mawdesley, Ormskirk (Feb. 20); Bottomsfields Farm, Woodhouses, Ashton-under-Lyne (Feb. 21).

Yorks. Town End Farm, Appleton Wiske, Northallerton (Feb. 17); Field and Blds. rear of Hospital, Long Street, Easingwold (Feb. 20); Mount Pleasant, Thornton Hill, Easingwold (Feb. 23).

Swine Fever

Derbys. Mooredge Farm, Owler Bar, Sheffield, Yorks (Feb. 21).

Dorset. Ringwood Road, Parkstone, Poole (Feb. 17).

Essex. Shooters Hatch Farm, Pleshey, Chelmsford (Feb. 21).

Hants. Northney Farm, Hayling Island (Feb. 21).

Leics. The Willows, Beggars Lane, Enderby (Feb. 19).

Norfolk. Rosavan, Low Road, Wortham, Diss (Feb. 17); The Bungalow, Goose Lane, Ingham, Norwich (Feb. 18); Old Boyland Hall Cottages, Bressingham, Diss (Feb. 21).

Salop. Upper Eyton, Alderbury, Shrewsbury (Feb. 21).

Somerset. Manor Farm, Bathampton, Bath; Bullring Farm, Misterton, Crewkerne (Feb. 17).

Suffolk. Green Farm, Barrow, Bury St. Edmunds; Oak Tree Farm and Haydons Farm, Norton, Bury St. Edmunds (Feb. 18).

Surrey. Manor House, Rectory Lane, Woodmansterne, Banstead (Feb. 17); 70, Selsdon Park Road, Croydon (Feb. 21).

Wilts. Manor Farm, Bremhill, Calne (Feb. 21).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

Scientific Contributions as Letters

Sir,—A letter appeared in THE VETERINARY RECORD of February 8th from Professor Beveridge who wrote of what he considered to be undesirable features associated with the rapid publication of brief research notes in the form of letters to the editor.

I should like to present an alternative point of view.

The publication of new work is a part of the research machine that is put under increasing strain at this present time of rapid expansion, and as an unfortunate result those who spend their lives endeavouring to add to knowledge are sometimes required to wait one or two years for what may be of the greatest help to them. The rapid spread of new knowledge is at the very root of research progress and almost anything that helps to avoid the braking effect of delayed publication is to be welcomed. It is pertinent therefore that in the gradual extension of one of its long-standing features *Nature* has taken a lead in short-cutting the publication delay by publishing numerous brief communications in the form of letters to the editor. Nor is it only in *Nature* that we now see this kind of publication of research findings. A hasty search through the shelves of the library at Weybridge shows the following journals to be doing the same kind of thing: *The Journal of Bacteriology* publishes brief accounts under the heading "Notes"; *Poultry Science* does the same thing under the heading "Research Notes"; *Endocrinology* under "Notes and Comments"; *The Journal of Economic Entomology* under "Scientific Notes"; *Science*, the American counterpart of *Nature*, publishes short notes of this kind under the heading "Reports"; *Chemistry and Industry* has two headings, "Letters to the Editor" and "Communications to the Editor," the latter being reports of research advance; and *Research* provides a particularly interesting example in that similarly short reports that used to appear as notes under the heading "Research Correspondence" are now headed "Letters to the Editor," beginning *Sir*. These brief notes all appear to be modelled on the pattern of the letters to the editor of *Nature*, and as the editor of that journal is now some months behindhand with his publication of letters we may suppose he welcomes the assistance so afforded.

We must all deplore with Professor Beveridge the scramble for priority that sometimes shows itself in scientific publication, but is it not true that obvious scramblers ultimately lose their credit among scientific workers? It is the work that is most thoroughly done that gets the credit in the end, and no doubt it is better that a little credit should occasionally go astray than that we should hold strictly to measures now obviously causing delay.

I think we should also agree with Professor Beveridge that it might be undesirable to mix two kinds of correspondence together; the refinement of separate headings, however, could easily be introduced by using one of the alternatives employed by the above-mentioned journals.

A suggestion for the publication of very brief research reports of this kind in THE VETERINARY RECORD has in fact already been discussed, and has met with a large measure of agreement so that I hope it may ultimately prove acceptable to all, including Professor Beveridge. My own view as to the precise form it should take favours that of correspondence addressed to "The Editor," tending as it does towards a concise and personal kind of expression that keeps things short and clear. Should we not, therefore, use THE VETERINARY RECORD as a medium for the rapid publication of research findings and so take advantage once again of its unique position as the only weekly veterinary publication in the English-speaking world?

Yours faithfully,
E. L. TAYLOR.

Central Veterinary Laboratory,
Ministry of Agriculture, Fisheries and Food,
Weybridge.

February 21st, 1958

Methods of Castration

Sir,—May I correct your correspondent, Mr. K. G. Towers, who refers to the article on castration methods, published in THE VETERINARY RECORD dated February 1st, 1958. The advantages of the "Burdizzo" method were stated to be the absence of sepsis and the minimum retarding effect upon the calf's progress. It was not stated to be the method causing least pain.

Experiments upon the various methods of castrating lambs have been made for a number of years, presumably due to the availability of material. Fraser (1933) reported a 10 per cent. weight increase at weaning in lambs castrated by the emasculator. Shier and Davenport (1936) and Garner and Sanders (1936), however, showed no significant differences in growth rate between the "Burdizzo" and "open" methods. Ewer (1942) stated, in comparing these two methods, that in no case was there any subsequent difference in either growth rate or mortality. None of the above authors appear to have mentioned any persistent symptoms of scrotal or testicular swelling. These results agree with work which my co-authors and I carried out at Compton. It was our experience that the physical changes following the application of the emasculator were no more pronounced in lambs than in calves. Hynek (1947) described a minor enlargement following emasculation of domestic animals and stated that it soon disappears.

The elastrator was described by Bennet and Beardwood (1949). These authors reported no difference in weight gains between this and the "open" method of castration. They noted a painful reaction lasting from 20 to 30 minutes after the application of the rubber ring, and also the retention of testicular substance on the body side of the ring. Sinclair *et al.* (1950) found no difference of growth rates between the elastrator and "open" methods of castration of different groups of lambs.

From all the available evidence there appears to be no significant difference in weight gains, where observations are made over a period of weeks, no matter which method of castration is employed. This applies both to lambs and calves.

I agree with Mr. Towers that the early use of the elastrator is accompanied by a smaller degree of tissue reaction, and a less painful condition follows. It is true to say that no matter which method is

employed, the earlier an animal is castrated the less will be the post-operative effect upon its growth rate.

Use of the elastrator in calves from 1 to 4 weeks causes far less reaction to occur than is described when this method is employed at 6 weeks old. A similar statement applies to the "Burdizzo" method. However, when applying the elastrator method to one-week-old lambs I have found the number of testicles not yet descended sufficiently great to make the method impracticable at such an early age.

After some experiences encountered during a few weeks in general practice, including an advanced case of tetanus in a 9-month-old "elastrated" bull, one hopes for keen support for members who discourage the use of the elastrator.

Yours faithfully,
B. K. FENTON.

Wharton House,
Bainbridge,
Leyburn,
Yorks.

February 12th, 1958.

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Pentazol for Heart Failure in Pigs

Sir,—In very fat pregnant sows, or sows which have just farrowed, a fatal heart failure may sometimes be seen. The cause of the condition may be lack of exercise or overfeeding. The sow stops eating, she prefers to lie down, and within a few days she gradually becomes a bluish colour on the belly, the ears, the snout, and on the submandibular region. The temperature is either normal or subnormal. Sometimes the sow is paretic, and cannot get to her feet. In this case immediate treatment is absolutely necessary, or the sow will succumb. I inject subcutaneously 4 to 5 c.c. of a 10 per cent. pentazol solution once a day for 2 or 3 days. In 4 to 5 days the bluish colour will disappear and the appetite returns.

Within the last year I have treated 5 cases, all with success. One of the sows had a relapse about 2 weeks after the first attack, but recovered after another injection of 5 c.c. of pentazol.

The condition may be mistaken for erysipelas and treatment with antibiotics will fail.

Yours faithfully,
JOHANNES AUSTVOLL.

Stavanger,
Norway.

February 16th, 1958.

Experiences with Cage-birds

Sir,—I would like to congratulate Mr. Arnall on the interesting and informative account of his experiences with cage-birds. One of the main difficulties which hinders the veterinary surgeon from giving the service he might in the treatment of these pets is the lack of information on their diseases, particularly those of budgerigars, which now outnumber dogs and cats as pets in this country. This difficulty can best be overcome by clinical surveys such as that made by Mr. Arnall, and by pathological surveys based on *post-mortem* examinations. I am conducting a survey of the latter sort, and would value the co-operation of practitioners in sending me carcases of cage-birds, particularly budgerigars, which become available. After examination of the carcase a report of my findings will be given. A history of each case is helpful and would be appreciated, and it is essential that carcases be despatched as soon after death as possible.

Yours faithfully,
J. E. BEACH.

Department of Pathology,
Royal Veterinary College,
Royal College Street,
Camden Town,
London, N.W.1.

February 18th, 1958.

Request for Material: Equine testicular teratoma (including "Dermoid Cysts")

Sir,—I have been attempting to obtain material from teratomata in animals, especially teratomata of the testicle of the horse. R. A. Willis in his book "Pathology of Tumours" describes three equine testicular teratomata which he reported previously with H. B. Rudduck and states that these are quite common tumours. Most of the cases of these tumours described have been in colts aged from 1 to 3 years and have been found at castration. Although malignancy may develop later, these tumours appear benign and well differentiated. With a limited amount of material, I have detected sex chromatin in the horse and would like to determine if any of the testicular teratomata have the female sex chromatin and also their number of chromosomes. In the human male, these testicular teratomata are relatively poorly differentiated in many cases and I feel that a comparative study might elucidate the histogenesis of these tumours.

As we all know, the horse population of this country has been drastically reduced since the war and equine teratomata now appear to be rare. Although special fixatives have been found desirable, I should be most grateful if any veterinary surgeon who finds a neoplastic testicle in the horse would forward a thin slice of it in fixing fluid, *e.g.* 10 per cent. formalin—I should refund the cost of postage.

Alternatively, if I could be contacted at the address below or by telephone, London, Cunningham 4884, extension 351 or 343, I should be glad to collect a

specimen or arrange for its collection if possible at the time of operation, when it could be placed immediately in one of the special fixatives. I should also like, if it is convenient to the practitioner, to attend any session, when a number of colts are castrated, as early stages of the lesion would also be of interest.

Yours faithfully,
JOHN GUTHRIE.

Pathology Department,
Paddington General Hospital,
Harrow Road,
London, W.9.

February 18th, 1958.

R.C.V.S. Elections

Sir,—The Editorial Committee has again kindly provided us with biographical details of the candidates for the Council of the Royal College. Once again I appeal to these candidates to carry on from where their biography ends.

Through your columns, in 1955, I asked that each candidate should be given an opportunity to tell us what special attributes he possesses which he considers would be useful to the Council, in what way he intends to further our interests (those who are sensitive about having their interests furthered please read "further the interests of the profession"), what views he holds on matters of current veterinary importance—in short, why he considers he is worthy of our votes. History is a good background but an electorate requires to know the currently held opinions of its candidates.

If there are others among your readers who hold views on this subject similar to my own I suggest that this year they cross out the names of all candidates who fail to produce an electoral address.

Yours faithfully,
J. DEANS RANKIN.

6, Benett Close,
Newbury,
Berks.

February 24th, 1958.

The "Space Dog"

Sir,—Mr. Henigan expresses amusement that Wall, Maguire, and myself should have protested at what we considered to be the perpetration of calculated cruelty, not on one, but on a number of dogs, for no useful purpose.

I, at any rate, was not amused. He takes us to task for "maiming" dogs and cats at owners' request. Presumably he refers to spaying and castration. Surely, these operations serve a definite, recognised, useful—even essential—purpose? Can Mr. Henigan tell me what useful purpose is served by strapping a dog in a very confined space, in utter darkness, and whirling him round the earth several hundred times, until he dies?

If he has a *convincing* argument I might accept it. But up to date I can see no possible advantage to man in landing on the moon. He certainly could not return.

Rightly or wrongly I think this "space" nonsense is a tragic waste of money and effort.

Yours faithfully,
H. KIRK.

28, Park Hill,
Ealing, W.5.

February 18th, 1958.

Philosophy and the Profession

Sir,—Although I thoroughly enjoy all philosophical and religious argument, I do not look to THE VETERINARY RECORD to supply this for me, nor I imagine do the majority of veterinary surgeons. It seems to me that the task of THE RECORD is to draw the profession together on its common ground and not to spotlight the inevitable gulfs between the religious, the agnostics, the atheists, the idealists, and the cynics, all of whom I am quite sure are well represented in our profession.

Yours faithfully,
J. A. BEECH.

21, Newmarket Street,
Skipton,
Yorks.

February 18th, 1958.

Famous Veterinarians

Sir,—I am so glad that my old student and friend, John Francis, is interested in veterinary history and I appreciate deeply his tribute to the late Dr. J. T. Edwards who was in my opinion the most erudite veterinary surgeon of his generation and a great and kindly gentleman.

J.T.'s discovery of a method for the prevention and control of the cattle plague (Rinderpest) has saved the world from untold loss and suffering amongst men and animals. No honour could have been too great for this man yet he was allowed to end his days in near poverty. The profession and those in authority can never escape from the shame of this ingratitude. John Francis has slipped in his historical facts. The "Tryp" Evans mentioned in the obituary notice of the late Professor George H. Wooldridge was not a veterinary surgeon. He was T. J. Evans, M.A., a colleague of G. H. W. on the staff at the Royal Veterinary College. He was Professor Evans and he was in charge of the Biology Department from 1915 until 1932. He came to the R.V.C. to deputise for Dr. Marret-Tims who was called to serve in the R.A.M.C. Dr. Tims did not return to the post after the war and Evans was appointed in his stead.

T. J. Evans was respected and indeed loved by the students and it was they who gave him the nickname "Tryp." No one seemed to know why and as far as I know he was not especially interested in the blood parasites.

Evans's post was a part-time one and his services were shared by Guy's Hospital Medical College where he was held in equal regard by the students and staff. When the Guy's post was made a whole-time one in 1932 he gave up his appointment at the R.V.C. with much regret.

T. J. had always a soft spot for veterinary students and he kept in touch with many of them until his death which occurred only a few years ago. He lived to be well over 80 years of age.

The Evans of Trypanosome fame was Dr. Griffith Evans who was born in Wales in 1835. He entered the Army Veterinary Service in 1860 and ultimately attained the rank of Inspecting Veterinary Surgeon. He went to Canada in 1861 and served there for several years with the Royal Artillery. Whilst in Montreal he graduated in human medicine (M.D., Ch.M.).

William Osler was a fellow student and Osler held his colleague in very high regard.

It was in 1880 whilst serving in India that Dr. Evans made his discovery that Surra was due to a flagellated protozoa in the blood. His unique discovery did not receive its due appreciation until long after he had left the service on account of age. Dr. Griffith Evans lived long enough—I think he was nearly 100 years of age when he died—to be acknowledged and honoured by his fellows. Maybe if J. T. Edwards had lived as long then he might have received his due reward also.

One final note to Professor Francis. We are veterinary surgeons. Why make use of that awful word "veterinarian"? The latter savours of some old comrades' association and is almost on a par with calling cattle bovines.

Yours faithfully,
J. McCUNN.

Royal Veterinary College,
Royal College Street,
London, N.W.1.
February 25th, 1958.

Animal Health Trust Disclosure on Protozoonosis in Britain

Sir,—May I respectfully draw attention to a cutting enclosed* from *Our Dogs* dated February 21st, 1958? Here it is stated that Professor Jackson's findings have been circulated to veterinary surgeons in practice throughout the country, and that they will be kept posted with developments.

Though I endeavour to co-operate with the Animal Health Trust in every way I have certainly received no information regarding Professor Jackson's findings, and on exploring THE VETERINARY RECORD as far back as December 21st, 1957, and the 1957 Index, I can see no reference to this subject.

I would be interested to know whether any colleagues have received such information and by what channel? One would think that, apart from the expense of mailing every veterinary surgeon in the country, THE VETERINARY RECORD would be the best medium through which to release such tremendous news to the profession; it is certainly not unkind to the A.H.T. as regards space.

It is surely to the benefit of the profession and the Trust that all members in practice be given the earliest opportunity to assess such an advance before any sensational release is made *via* the lay press?

Yours faithfully,
CECIL SCHWARTZ.

United House,
31, Cardiff Road,
Luton,
Beds.

February 23rd, 1958.

* The cutting is headed "Protozoonosis is Puppy Killer; New A.H.T. Disclosure."

The Animal Health Trust comments:—

Some details of Professor Jackson's work became known to members of the profession who make use of the diagnostic service provided by the Canine Centre. A hint also came to the notice of the press. The Director of the Centre was questioned by a reporter who made clear his intention of writing an article. In order to prevent incorrect information from being published an interview was granted. The press statement that all veterinary surgeons have been circulated is not correct.

A fully documented paper is being prepared for submission to the veterinary press.

ADVERTISER'S ANNOUNCEMENT

PARKE, DAVIS & COMPANY, LIMITED, announce the availability of Intramycetin, an aqueous, 15 per cent. suspention of Chloromycetin for intramuscular injection. Intramycetin is indicated where parenteral broad-spectrum antibiotic therapy is required in large- or small-animal practice, and it is available in a rubber-capped vial containing 10 ml. Intramycetin (equivalent to 1½ g. Chloromycetin).

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN
Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period		Anthrax	Atrophic Rhinitis	Foot-and-Mouth	Fowl Pest	Sheep Scab	Swine Fever
16th to 31st January, 1958		8	—	28	45	—	58
Corresponding period in	1957	17	—	1	67	—	40
	1956	100	—	—	24	—	28
	1955	59	—	5	45	—	45
1st January to 31st January, 1958		15	—	43	120	—	106
Corresponding period in	1957	32	—	19	125	—	70
	1956	117	—	—	97	—	58
	1955	93	—	5	85	—	83